

APPENDIX C

High Severity Burn Patch Size Analysis

Natural range of variation (NRV) assessments provide baseline information on ecosystem conditions (composition, structure, and function) that can be compared to current conditions to develop an idea of trend over time and an idea of the level of departure of altered ecosystems from their "natural" state. Safford and Stevens researched fire high severity patch sizes in *Natural Range of Variation for Yellow Pine and Mixed Conifer Forests in the Sierra Nevada, Southern Cascades, and Modoc and Inyo National Forests, California, USA* (Safford and Stevens, 2017). In low- and middle-elevation forests, high-severity patch size has increased, with a dominance of small, scattered patches in presettlement and reference estimates, versus more contiguous coarser grained patchiness in modern fire-suppressed forests. High-severity patches more than a few hectares in size were relatively unusual (although not unknown) in fires in Sierra Nevada YPMC forests before Euro-American settlement but in recent years high-severity patches >500 ha have become a regular occurrence (Safford and Stevens, 2017).

A patch size analysis was completed on 25,805 acres of forested land that burned at high vegetation severity (>75 percent basal area mortality) in the Walker Fire (Table 1). Although nonforest vegetation burned in large patches in the Walker Fire, the intent of this patch size analysis is to show forested land that is now deforested in large patches, so nonforest vegetation was excluded.

This 25,805 acres, forty four percent of the Walker fire area, had nine large patches of high severity fire over 247 acres (100 hectares), the largest being a 6,549 acre (2650 hectare) patch of contiguous high vegetation burn severity. The Walker Fire burned with nine high severity patches at greater than 100 hectares, with thirty percent of the total forested area within high severity contiguous patches.

Large fire patch size increases the need to recover economic losses from timber stands where a sustained yield is expected. Increase in patch size is one factor (in addition to increases in fire area and overall fire severity) that have led to a recent increase in the extent of early seral montane chaparral stands (Safford and Stevens, 2017).

Table 1. *Contiguous High Vegetation Burn Severity Patches in Walker Fire*

Patch Number	Acres (hectares) at high severity	Percent of Forested Walker Fire Area (49,379 acres)	Percent of Walker Fire Area Total (58,787 acres)
1	6549 acres (2650 hectares)	13%	11%
2	4267 acres (1727 hectares)	9%	7%
3	967 acres (391 hectares)	2%	2%
4	768 acres (311 hectares)	2%	1%
5	700 acres (283 hectares)	2%	1%
6	622 acres (252 hectares)	1%	1%
7	310 acres (125 hectares)	<1%	<1%
8	292 acres (118 hectares)	<1%	<1%
9	278 acres (113 hectares)	<1%	<1%
Total	14,753	30%	25%

Walker Fire Recovery Project Environmental Assessment
Appendix C – Patch Size Analysis

Walker Fire Recovery Project
High Vegetation Burn Severity Patches in Pre-fire Forested Land
and Non-forest Cover Types
High severity=75%-100% vegetation burn severity

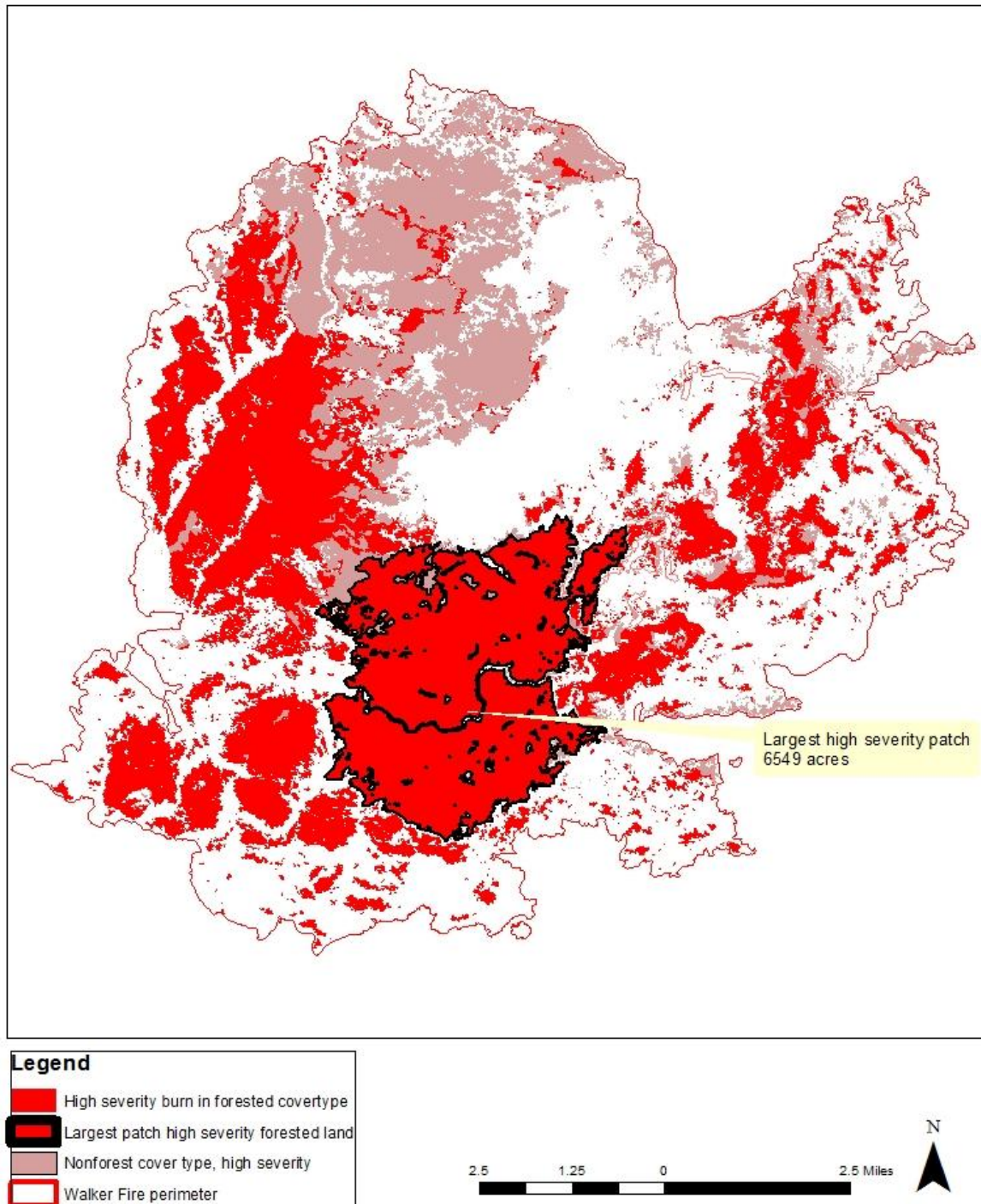


Figure 1. High Severity Burn Patches in Walker Fire